In Reply Refer To: RP-2-1

JAN 4 1985

Shell Offshore Inc.
Attention: Mr. M. L. Blantr
Post Office Box 61933
New Orleans, Louisiana 70161

Gentlemen:

Reference is made to your Initial Plan of Exploration and Environmental Report received December 24, 1984, amended December 28, 1984, for Leases OCS-G 6889, 6892, and 6893, Blocks 867, 911, and 912, respectively, Viosca Knoll Area. This plan includes the activities proposed for Wells A through F.

In accordance with 30 CFR 250.34, revised December 13, 1979, and our letter dated January 29, 1979, this plan has been determined to be complete as of January 4, 1985, and is now being considered for approval.

Your plan control number is N-1958 and should be referenced in your communication and correspondence concerning this plan.

Sincerely yours,

(Orig. Sgd.) D.W. Solanas

D. W. Solanas
Regional Supervisor
Rules and Production

bcc: Lease OCS-G 6889 (OPS-2-3) (FILE ROOM)
Lease OCS-G 6892 (OPS-2-3) (FILE ROOM)
Lease OCS-G 6893 (OPS-2-3) (FILE ROOM)
OPS-2-5 w/Public Info. Copy of the plan and ER (PUBLIC RECORDS ROOM)
DO-5

ADGobert:gcw:12/28/84 Disk 3b

Office of
Program Services

JAN 7 1985

Records Management
Section

N 1958

Shell Offshore Inc.
A Subsidiary of Shell Oil Company

One Shell Square
P.O. Box 61933
New Orleans, Louisiana 70161

Frontier Production Group

December 21, 1984

Regional Supervisor
Offshore Rules and Production
Minerals Management Service
P. O. Box 7944
Metairie, LA 70010

MINERALS MANAGEMENT SERVICE

DEC 24 1984

RULES AND PRODUCTION

Gentlemen:

SUBJECT: PLAN OF EXPLORATION
SOI OCS-G 6889, VIOSCA KNOLL BLOCK 867
SOI OCS-G 6892, VIOSCA KNOLL BLOCK 911
SOI OCS-G 6893, VIOSCA KNOLL BLOCK 912
OFFSHORE ALABAMA

Shell Offshore Inc. (SOI) herewith submits for your approval a plan of exploration (POE) for the captioned leases.

This plan is submitted in accordance with 30 CFR 250.34, effective December 13, 1979, and subsequent guidelines.

This plan consists of a series of attachments describing details of our intended operations. The attachments we desire to be exempted from disclosure under the Freedom of Information Act are marked "Confidential."

Drilling and other operations will be conducted under the applicable provisions of OCS Orders 1, 2, 3, 4, 7, 11 and 12 and other applicable regulations, orders and notices including those regarding the avoidance of potential drilling hazards and in the interest of safety and pollution prevention and control.

A search for cultural resources prior to drilling is not required for these leases.

The drilling rig we intend to use, the Sonat drillship Discoverer Seven Seas, has previously been approved for use in the Gulf of Mexico and is presently being operated by SOI in Green Canyon Block 116. We would appreciate your approval of our Plan of Exploration as soon as possible. We anticipate the Discoverer Seven Seas may be available to commence drilling on our Plan as early as January 28, 1985.

Our report, Shallow Drilling Hazards, is being completed now and will be submitted in a few days.

PUBLIC INFORMATION

LC84349022W

Should you require additional information, please contact D. L. Forsander in SOI's New Orleans, LA office at (504) 588-6314 or 6312.

Yours very truly,

J. Hellings for

M. L. Blanton
Manager, Frontier Production Group

DLF:KMY

Attachments

INDEX OF ATTACHMENTS
PLAN OF EXPLORATION
SOI OCS-G 6889, VIOSCA KNOLL BLOCK 867
SOI OCS-G 6892, VIOSCA KNOLL BLOCK 911
SOI OCS-G 6893, VIOSCA KNOLL BLOCK 912
OFFSHORE ALABAMA

ATTACHMENT NO.	DESCRIPTION	NO. OF COPIES
1	Index of Attachments	11
2	Description of Activities	11
3	Schedule of Activities	11
4	Plat, Surface Locations of Wells	
5	Plat, Proposed Well Locations and Depths	5*
6-A	Map, Shallow Structure	5*
6-B	Map, Deep Structure	5*
7-A	Cross Section, NE-SW	5*
7-B	Cross Section, NW-SE	5*
8	List, Drilling Mud Components and Additives	11
9	Comments, Spill Prevention, Control and Countermeasure Plan	11
10	Air Emissions Data	11
11	Description, Onshore Support Facility	11
12	Support Vessels, Description, Travel Frequency	11
13	Plat, Lease Vicinity & Transportation Routes	11
14	Certificate of Consistency, Alabama	11
15	Certificate of Consistency, Louisiana	11
16	REPORT, SHALLOW DRILLING HAZARDS**	3**
17	ENVIRONMENTAL REPORT	11

* Confidential, 5 copies.
** Confidential, 3 copies. Will be submitted in a few days.

DESCRIPTION OF ACTIVITIES
PLAN OF EXPLORATION
SOI OCS-G 6889, VIOSCA KNOLL BLOCK 867
SOI OCS-G 6892, VIOSCA KNOLL BLOCK 911
SOI OCS-G 6893, VIOSCA KNOLL BLOCK 912
OFFSHORE ALABAMA

The planned wells are designed to test seismic anomalies in Pliocene and Miocene beds. Six locations may be required. Geopressures requiring protective casing are expected at approximately 10,500 feet.

The wells will be drilled, evaluated and either temporarily or permanently abandoned in accordance with OCS Order No. 3. One or more of the wells may be flow-tested for evaluation purposes as part of the Plan of Exploration. Plan details will be submitted in advance as necessary. If further exploration and/or development/production are to be undertaken thereafter, appropriate plans will be submitted.

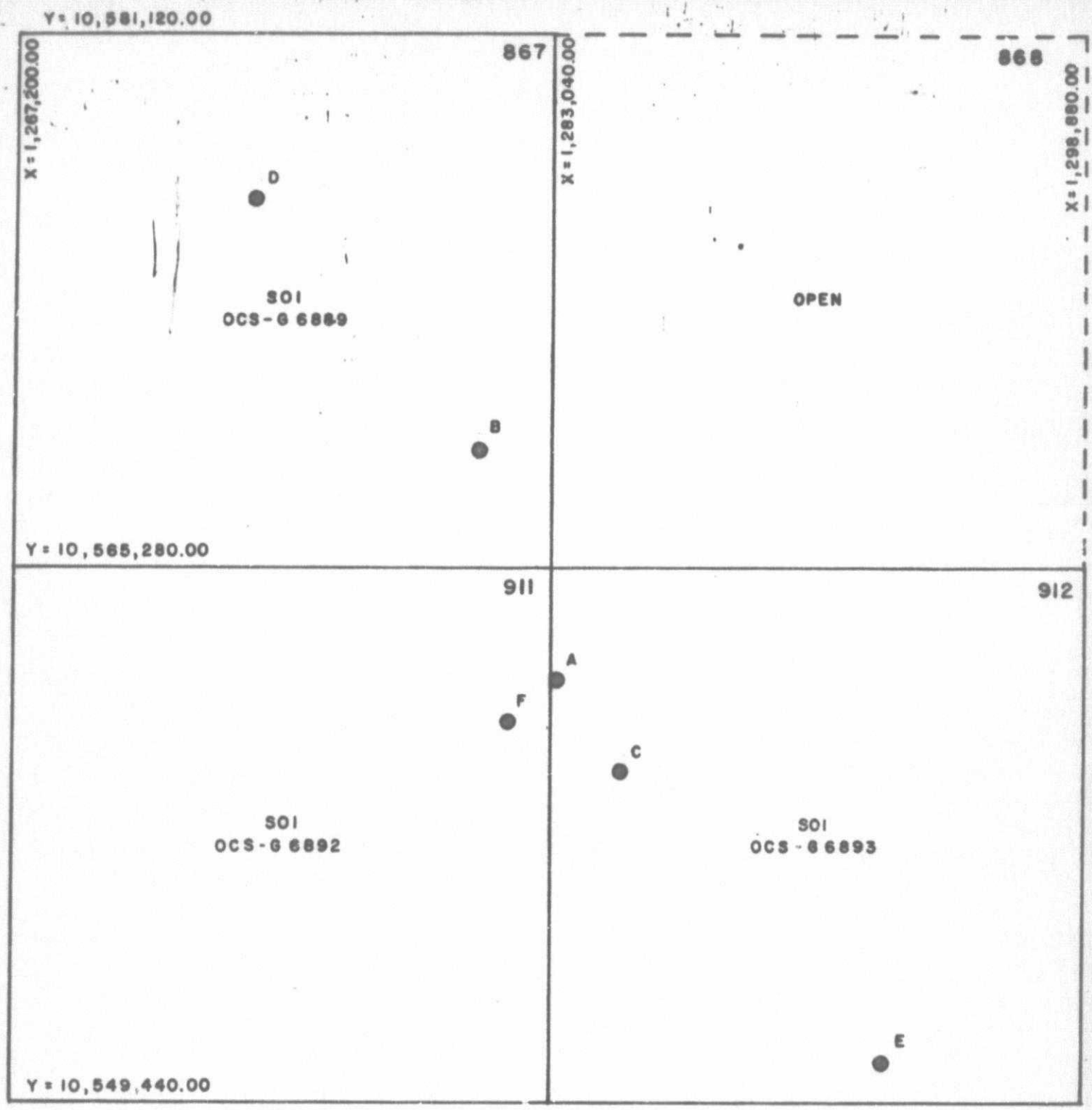
Attachment 2

SCHEDULE OF ACTIVITIES
PLAN OF EXPLORATION
SOI OCS-G 6889, VIOSCA KNOLL BLOCK 867
SOI OCS-G 6892, VIOSCA KNOLL BLOCK 911
SOI OCS-G 6893, VIOSCA KNOLL BLOCK 912
OFFSHORE ALABAMA

Exploratory drilling may begin as early as January 28, 1985. Our scheduled starting date may vary from this, depending upon drilling rig availability and the outcome of other wells we are drilling, or plan to drill.

Drilling each location is expected to require about 100 days. Thus, the entire program would require about 600 days. It is possible, however, that wells will not be drilled at all the specified locations, and not necessarily in the alphabetical order shown, depending on results of the first well.

Attachment 3



● PROPOSED WELL LOCATIONS

N

PROPOSED LOCATION	PROPOSED SURFACE LOCATIONS
A	71' FWL, 3212' FNL OF BLK. 912
B	2219' FEL, 3592' FSL OF BLK. 867
C	2105' FWL, 6034' FNL OF BLK. 912
D	6914' FWL, 4957' FNL OF BLK. 867
E	5805' FEL, 1207' FSL OF BLK. 912
F	1300' FEL, 4500' FNL OF BLK. 911

ATTACHMENT-4

SHELL OFFSHORE INC.
(A SUBSIDIARY OF SHELL OIL COMPANY)

PROPOSED WELL LOCATIONS

PLAN OF EXPLORATION
SOI OCS-G 6889 BLK. 867
SOI OCS-G 6892 BLK. 911
SOI OCS-G 6893 BLK. 912
VIOSCA KNOLL BLOCKS 867, 911, 912
OFFSHORE ALABAMA

0 4000' 8000'

DRILLING MUD COMPONENTS & ADDITIVES
PLAN OF EXPLORATION
SOI OCS-G 6889, VIOSCA KNOLL BLOCK 867
SOI OCS-G 6892, VIOSCA KNOLL BLOCK 911
SOI OCS-G 6893, VIOSCA KNOLL BLOCK 912
OFFSHORE ALABAMA

I. ITEMS USED ON A ROUTINE BASIS:

TRADE NAMES						
DELTA MUD	IMCO	BAROID	MILCHEM	MAGCOBAR	NEWPARK	DESCRIPTION
DEL-BAR	IMCO BAR	BARITE/BAROID	BARITE/MILBAR	BARITE/MAGCOBAR	NEW-BAR	BARITE (BARIUM SULFATE)
DEL-GEL	IMCO GEL	AQUAGEL	MILGEL	MAGCOGEL	NEW-GEL	BENTONITE
DEL-LIG	IMCO LIG	CARBONOX	LIGCO	TANNATHIN	NEW-LIQ	LIGNITE
CLCLS	RD-111	Q-BROXIN	UNI CAL	SPERCENE	NEWPARK FLO EZ	BLENDED LIGNOSULFONATE
CAUSTIC SODA	CAUSTIC SODA	CAUSTIC SODA	CAUSTIC SODA	CAUSTIC SODA	CAUSTIC SODA	SODIUM HYDROXIDE
ALUMINUM STEARATE	ALUMINUM STEARATE	ALUMINUM STEARATE	ALUMINUM STEARATE	ALUMINUM STEARATE	ALUMINUM STERATE	ALUMINUM STEARATE
LIME	LIME	LIME	LIME	LIME	LIME	CALCIUM HYDROXIDE
CLS	IMCO THIN	CC-16	LIGCON	XP-20	NEW-LIQ-C	BLENDED LIGNITE/CAUSTIC
SODA ASH	SODA ASH	SODA ASH	SODA ASH	SODA ASH	SODA ASH	SODIUM CARBONATE
BICARB	BICARB	BICARB	BICARB	BICARB	BICARB	BICARBONATE OF SODA
-	POLY RX	-	CHEMIROL-X	RESINEX	FILTREX	SELECTED POLYMER BLEND
DEL-DET	IMCO MD	CON DET.	M.D.	D-D	NEWPARK DETERGENT	DETERGENT
DE-FOAMER	FOAMBAN	DEFOAMER	W.O. DEFOAM	MAGCONOL	NEWPARK NO-FOAM	DEFOAMER (USUALLY ALCOHOL BASED)
-	-	AKTAFLOS	-	-	FREELUBE	NONIONIC MUD SURFACTANT
CMC	CMC	CMC	CMC	CMC	CMC	SODIUM CARBOXY METHYL CELLULOSE
-	IMCO LOID	IMPERMEX	MILSTARCH	MY LO JEL	NEW-STARCH	PRECELATINIZED STARCH
CYPAN OR WL-100	CYPAN OR WL-100	CYPAN OR WL-100	CYPAN OR WL-100	CYPAN OR WL-100	CYPAN	SODIUM POLYACRYLATE
-	PERMLOID	DEXTRID	PERM-LOSE	POLY SAL	DRILOSE	ORGANIC POLYMER
DRISPAC	DRISPAC	DRISPAC	DRISPAC	DRISPAC	DRISPAC	POLYANIONIC CELLULOSE
GYP	GYP	GYP	GYP	GYP	GYPSUM	GYPSUM (PLASTER OF PARIS)
HME/SUPERDRIL	HME/SUPERDRIL	HME/SUPERDRIL	HME/SUPERDRIL	HME/SUPERDRIL	HME SUPERDRIL	GILSONITE (TREATED) - NATURAL HYDROCARBON
BLACK MAGIC SUPERMIX (SFT)	BLACK MAGIC SUPERMIX (SFT)	BLACK MAGIC SUPERMIX (SFT)	BLACK MAGIC SUPERMIX (SFT)	BLACK MAGIC SUPERMIX (SFT)	BLACK MAGIC	MUD CONCENTRATE FOR SPOTTING FLUID
DML IV	LUBRIKLEEN	TORQ TRIM	LUBRISAL	MAGOLUBE	DRIL-LUBE	ORGANIC LUBRICANT
DEL-MICIA	IMCO MYCA	MICA TEX	MIL-MICA	MAGO-MICA	NEWPARK MICA	MICA-FLAKES

Attachment 8

LC84349022W

DRILLING MUD COMPONENTS & ADDITIVES (Continued)

TRADE NAMES						
DELTA MUD	IMCO	BAROID	MILCHEM	MACCOBAR	NEWPARK	DESCRIPTION
DEL-PLUG	IMCO PLUG	WALL-NUT	MIL PLUG	NUT PLUG	NU-PLUG	GROUND WALNUT OR OTHER NUT HULLS
SODIUM CHROMATE	SODIUM CHROMATE	SODIUM CHROMATE	SODIUM CHROMATE	SODIUM CHROMATE	SODIUM CHROMATE	SODIUM CHROMATE
IRONITE	IRONITE	IRONITE	IRONITE	IRONITE	IRONITE	SYNTHETIC IRON OXIDE, H_2S SCAVENGER
-	-	-	MIL GARD	-	X-H_2S	H_2S SCAVENGER (ZINC CARBONATE)
SEPARAN	SEPARAN	SEPARAN	SEPARAN	SEPARAN	SEPARAN	POLYACRYLAMIDE POLYMER
SALT	SALT	SALT	SALT	SALT	SALT	SODIUM CHLORIDE
SAPP	SAPP	SAPP	SAPP	SAPP	SAPP	SODIUM ACID PYROPHOSPHATE
-	-	-	SHALE TROL	-	-	ORGANO/ALUMINUM COMPOUND
KCL	KCL	KCL	KCL	KCL	KCL	POTASSIUM CHLORIDE (POTASSIUM)
MF-1	MF-1	MF-1	MF-1	MF-1	MF-1	SELECTIVE FLOCULANT
BEN-EX	BEN-EX	BEN-EX	BEN-EX	BEN-EX	BEN-EX	CLAY EXTENDER
II. OIL BASE MUD ADDITIVES:						
DEL-VERT, CONC	KEN-X	INVERMUL	CARBO-TEC L	VERTOIL/OIL FAZE	OPTI MUL	PRIMARY EMULSIFIER
DEL-VERT II	-	-	CARBO-MUL	SE-11	OPTI-PLUS E	SECONDARY EMULSIFIER
DEL-K	KEN-THIN	-	-	-	-	DISPERSANT
DEL-G	KEN X CONC	DRILL TREAT	-	DV-22	OPTI-PLUS-OLC	HIGH TEMP. STABLIZER, FILTRATE CONTROL
DELTONE	KEN-GEL	GEL TONE	CARBO-GEL	VG-69	OPTI VIS	VISCOSIFIER WEIGHT SUSPENDING AGENT
OKIVERT	KEN-OX	LIME	LIME	LIME	LIME	CALCIUM HYDROXIDE
MENTOR-28	MENTOR-28	MENTOR-28	MENTOR-28	MENTOR-28	MENTOR 28	LOW TOXICITY MINERAL OIL (DIESEL SUBSTITUTE)

III. METHOD OF DISPOSAL:

All mud additives will be disposed of overboard into the Gulf of Mexico after dilution of fresh or seawater. Any fluid containing free oil will be transported to land for disposal.

Attachment 8 (Cont'd)

LC84349022W

SPILL PREVENTION, CONTROL
AND COUNTERMEASURE PLAN
PLAN OF EXPLORATION
SOI OCS-G 6889, VIOSCA KNOLL BLOCK 867
SOI OCS-G 6892, VIOSCA KNOLL BLOCK 911
SOI OCS-G 6893, VIOSCA KNOLL BLOCK 912
OFFSHORE ALABAMA

SOI's latest revisions to its "Spill Prevention, Control and Countermeasure Plan" were approved by the MMS on November 27, 1984. The drilling plans proposed herewith will rely primarily on the spill equipment stored at the Clean Gulf Associates bases in Grand Isle and Venice, Louisiana. Section III of the submitted plans lists available equipment at these bases plus other bases from which additional equipment can be drawn. Section II lists the preventive measures to be taken to minimize oil spills and the reporting procedures to be followed in the event that one occurs. Section VI provides a detailed discussion of the clean-up procedures to be initiated, including a listing of the personnel that make up the clean-up organization. The training of these personnel is summarized in Section XII. Assuming two hours to load out equipment and a 12-knot cruising speed, a fast response unit can normally be on location in 8 hours.

Attachment 9

AIR EMISSIONS DATA
PLAN OF EXPLORATION
SOI OCS-G 6889, VIOSCA KNOLL BLOCK 867
SOI OCS-G 6892, VIOSCA KNOLL BLOCK 911
SOI OCS-G 6893, VIOSCA KNOLL BLOCK 912
OFFSHORE ALABAMA

DRILLING PHASE

Table 4.2 of EPA's 450/3-77-026 Report entitled "Atmospheric Emissions from Offshore Oil and Gas Development and Production" shows that for a typical drilling rig, 3,400, 1,900, 300 horsepower are required for (1) drilling, (2) tripping, casing and coring and (3) surveys and logs, respectively. Table 4.3 of this same report provides a scenario of a 30-day, 10,000-foot well indicating a total horsepower usage of 597,200 HP-hr. If it is assumed that the same breakdown of rig activity and power requirements is applicable to the proposed program, then the total horsepower usage for this project will be approximately 12,000,000 HP-hrs. Based on the emission rates for oil-fired reciprocating engines (Table 4.4), the following gaseous emissons would be generated during the 600 days drilling activity.

	EMISSIONS (TONS)		
	Daily	Yearly	Total Project (600 days)
NO_x	0.284	103.7	170.5
SO_2	0.019	6.94	11.41
HC	0.009	3.29	5.41
CO	0.042	15.3	25.2
Particulates	UNK	UNK	

WATER TRANSPORTATION

The horsepower usage of the two vessels to be used in conjunction with this operation are as follows:

176 Ft. Cargo Vessel

$$2{,}400 \text{ hp} \times .80 \text{ load factor} \times \frac{23.4 \text{ hr.}}{\text{trip}} \times \frac{14 \text{ trips}}{\text{month}} \times 19.7 \text{ morths} = 12{,}390{,}000 \text{ HP-hr.}$$

Attachment 10

80 Ft. Standby Vessel

165 hp X .80 load factor X $\frac{23 \text{ hrs.}}{\text{day}}$ X 600 days = 1,822,000 HP-hr.

1,000 hp X .80 load factor X $\frac{1 \text{ hr.}}{\text{day}}$ X 600 days = 480,000 HP-hr.

TOTAL 14,700,000

Based on Table 4.4, the gaseous emissions generated by water transportation are as follows:

	EMISSIONS (TONS)		
	Daily	Yearly	Total Project (600 days)
NO_x	0.35	127.0	208.74
SO_2	0.023	8.57	14.08
HC	0.012	4.23	6.96
CO	0.051	18.6	30.58
Particulates	UNK	UNK	UNK

Attachment 10 (Cont'd)

EXEMPTION CALCULATION FOR DRILLING, ACTIVITIES

The proposed location is 51 miles from the nearest shoreline. Therefore, the emission exemption (E) for the various pollutants is as follows:

CO $E = 3,400\ (51)^{2/3} = 46,800$ tons/year

NO_x

SO_2 $E = 33.3\ (51) = 1,700$ tons/year

HC

Particulates

Yearly emissions from the drilling operations (Drilling and Water Transportation) are:

	Tons/Yr.
NO_x	230.7
SO_2	15.5
HC	7.5
CO	33.9
Particulates	UNK

The total emission for any one pollutant does not exceed the exemption totals above; consequently, no further air quality review is required for the emissions from the operations in connection with this Plan.

Attachment 10 (Cont'd)

ONSHORE SUPPORT FACILITY
PLAN OF EXPLORATION
SOI OCS-G 6889, VIOSCA KNOLL BLOCK 867
SOI OCS-G 6892, VIOSCA KNOLL BLOCK 911
SOI OCS-G 6893, VIOSCA KNOLL BLOCK 912
OFFSHORE ALABAMA

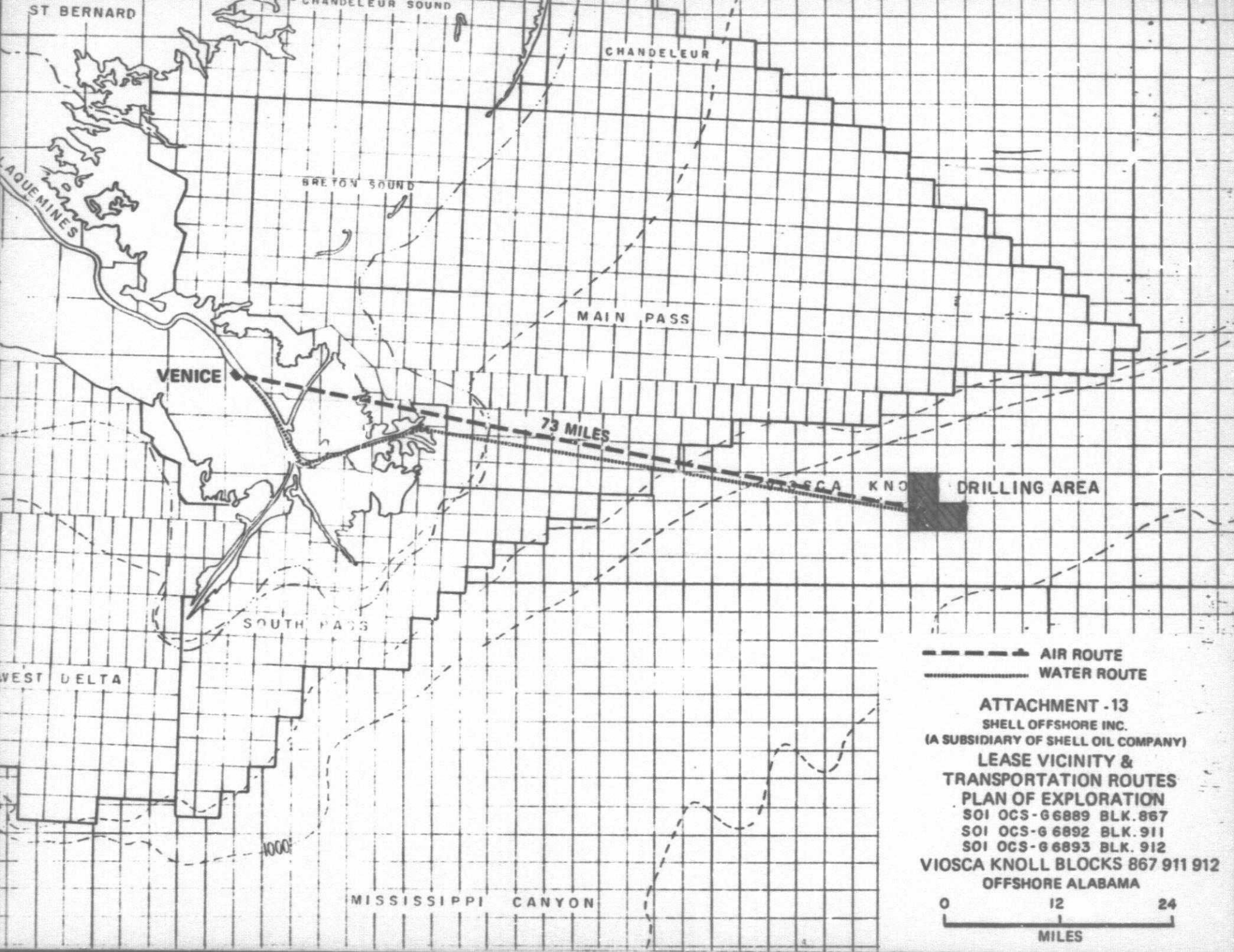
The onshore support base for this activity will be SOI's existing Venice Terminal. This facility is located on the Mississippi River near Venice, Louisiana, approximately 35 miles up-river from the Gulf of Mexico. The physical plant covers 14 acres and includes 1,000 linear feet of waterfront, 3,000 square feet of office space, 3,200 square feet of personnel quartering space and 7,200 square feet of covered warehouse area. One 45-ton crane and two fork trucks are used for material handling operations. No expansion of the Venice Terminal will be required for this activity. In addition to the above, tubular goods will usually be shipped by land to Venice from one of the contract warehouses located in Morgan City, Louisiana, which will also require no expansion. Also, while personnel transported by helicopter will be picked up and returned to SOI's Venice Terminal, both Air Logistics and PHI operate bases at Venice for refueling and maintenance.

Attachment 11

SUPPORT VESSELS
PLAN OF EXPLORATION
SOI OCS-G 6889, VIOSCA KNOLL BLOCK 867
SOI OCS-G 6892, VIOSCA KNOLL BLOCK 911
SOI OCS-G 6893, VIOSCA KNOLL BLOCK 912
OFFSHORE ALABAMA

ITEM	SIZE OR MODEL	USE	APPROXIMATE TRIPS PER WEEK
Boat	176'±	Cargo	3 or 4
Boat	80'-100'	Standby	N.A.
Helicopter	Bell 205, 206B or 212	Crew Change and Misc.	18 to 22

Attachment 12


ST BERNARD
CHANDELEUR SOUND
CHANDELEUR
BRETON SOUND
MAIN PASS
VENICE
73 MILES
DRILLING AREA
SOUTH PASS
WEST DELTA
MISSISSIPPI CANYON
AIR ROUTE
WATER ROUTE
ATTACHMENT - 13
SHELL OFFSHORE INC.
(A SUBSIDIARY OF SHELL OIL COMPANY)
LEASE VICINITY &
TRANSPORTATION ROUTES
PLAN OF EXPLORATION
SOI OCS-G 6889 BLK. 867
SOI OCS-G 6892 BLK. 911
SOI OCS-G 6893 BLK. 912
VIOSCA KNOLL BLOCKS 867 911 912
OFFSHORE ALABAMA
0 12 24
MILES

COASTAL ZONE MANAGEMENT
CONSISTENCY CERTIFICATION

PLAN OF EXPLORATION
Type of Plan

VIOSCA KNOLL BLOCK 867
VIOSCA KNOLL BLOCK 911
VIOSCA KNOLL BLOCK 912

OCS-G 6889
OCS-G 6892
OCS-G 6893

The proposed activities described in detail in this Plan comply with Alabama's approved Coastal Management Program and will be conducted in a manner consistent with such Program.

Such findings are summarized on the final page of the attached Environmental Report (ER).

SHELL OFFSHORE INC.
Operator

for
M. L. Blanton
Manager, Frontier Production Group

December 21, 1984
Date

Attachment 14

COASTAL ZONE MANAGEMENT
CONSISTENCY CERTIFICATION

PLAN OF EXPLORATION
Type of Plan

VIOSCA KNOLL BLOCK 867
VIOSCA KNOLL BLOCK 911
VIOSCA KNOLL BLOCK 912

OCS-G 6889
OCS-G 6892
OCS-G 6893

The proposed activities described in detail in this Plan comply with Louisiana's approved Coastal Management Program and will be conducted in a manner consistent with such Program.

Such findings are summarized on the final page of the attached Environmental Report (ER).

A request is being made to the official state journal, The States Times, published in Baton Rouge, for publication, on January 8, 1985 of our notice of exploration plans.

SHELL OFFSHORE INC.
Operator

J. Mullins for
M. L. Blanton
Manager, Frontier Production Group

December 21, 1984
Date

Attachment 15

CSA

1. TITLE PAGE

Continental Shelf Associates, Inc.

P. O. Box 3609 Jupiter/Tequesta, Florida 33458

ENVIRONMENTAL REPORT
(PLAN OF EXPLORATION)
GULF OF MEXICO: OFFSHORE
ALABAMA AND LOUISIANA
VIOSCA KNOLL AREA
BLOCK 780 (OCS-G 6884)
BLOCK 783 (OCS-G 6886)
BLOCK 867 (OCS-G 6889)
BLOCK 911 (OCS-G 6892)
BLOCK 912 (OCS-G 6893)
SHELL OFFSHORE INC.

29 JUNE 1984

MR. T. M. RANDOLPH
STAFF ENVIRONMENTAL ENGINEER
SHELL OFFSHORE INC.
ONE SHELL SQUARE
P.O. BOX 60159
NEW ORLEANS, LOUISIANA 70160
TELEPHONE: (504) 588-6463

"Applied Marine Science and Technology"

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

LIST OF TABLES

LIST OF FIGURES

2. SUMMARY

This summary has been designed to comply with NTL 80-6 dated 2 June 1980 and outlines the Environmental Report for Viosca Knoll Area Blocks 780, 783, 867, 911, and 912 dated 29 June 1984.

Shell Offshore Inc. plans to conduct exploratory activities in Blocks 780, 783, 867, 911, and 912. The proposed activities will take place in waters adjacent to the States of Alabama and Louisiana. The onshore support base for the proposed activities will be located in Venice, Louisiana. This base is capable of providing the services necessary for the proposed activities. No new workers will be needed. Helicopters and boats will move supplies to and from the offshore and onshore locations by normally following the most direct route. No new techniques or unusual technology will be used during the proposed activities.

The proposed activities are located within some of the most productive fishing grounds in the Gulf of Mexico. Planktonic eggs and larval stages of all commercially important shrimp species may occur periodically in the lease areas. The blue crab harvest is taken inshore of the lease areas but gravid females and planktonic larvae may occur seasonally in the lease areas. Blocks 780 and 783 are located within commercially important finfish fishing grounds, but Blocks 867, 911, and 912 are not. Due to a net

inshore-offshore movement it is probable that many demersal shelf fish species may occur in the lease areas at some phase of their life cycles. Eggs and larvae of various commercially important fish species are probably also present in the lease areas on occasion.

The proposed activities are rated as having minimal potential impact on shipping as they are greater than 5 km (2.6 NM) from a fairway.

The proposed activities are located outside the Historic and Prehistoric Cultural Resources High Probability Lines. Archeological Surveys were not required for these lease areas.

None of the proposed activities in the lease areas should have any effect upon Alabama's or Louisiana's "Special Management Areas" or on offshore terrestrial areas of ecological significance, remnant coastal banks, or oyster grounds.

The lease areas are not located in an area designated for ocean dumping, contain no known mineral resources other than oil and gas, and are void of existing pipelines or cables.

No critical habitat for endangered or threatened species of sea turtles or cetaceans is known to exist in the lease areas.

Discharge of drilling muds and cuttings will adversely affect the environment. These impacts will be temporary, however, and will be limited to an extremely small area. All discharges will comply with all applicable MMS and EPA requirements.

The effects of a possible oil spill should have no overall cumulative or long-term effect on the environment. A spill would be handled according to an oil spill contingency plan approved by the MMS. Thus, it is unlikely that a spill would occur during operations and affect any nearshore or onshore areas or resources.

The proposed activities covered by this Plan should have no significant impact on endangered species, critical habitat, wetlands, cultural resources, recreational activities, shoreline aesthetics, or other land uses.

To the best of our knowledge, the set of findings included in the Environmental Report and Plan indicates that each of the proposed activities, their associated facilities, and effects are all consistent with and comply with the provisions and guidelines of the Alabama and Louisiana-approved Coastal Zone Management Programs. The proposed activities will be conducted in a manner consistent with the Coastal Zone Management Programs as outlined in USDC and ACAB (1979) and USDC and LDNR (1980).

3. DESCRIPTION OF THE PROPOSED ACTION

(a) DESCRIPTION OF PROPOSED TRAVEL MODES AND ROUTES AND FREQUENCY FOR MOVING SUPPLIES AND PERSONNEL TO AND FROM THE OFFSHORE ACTIVITY SITE AND THE ONSHORE BASES

Shell Offshore Inc. plans to conduct exploratory activities in Viosca Knoll Area Blocks 780, 783, 867, 911, and 912. Helicopters and boats will move supplies and personnel to and from the offshore and onshore locations. Helicopters will make approximately 18 to 22 round trips per week, and boats will make approximately 14 round trips per month. If servicing only the proposed lease areas, helicopters and boats will normally take the most direct route, weather and traffic conditions permitting (see Figure 1). Distances from Blocks 780, 783, 867, 911, and 912 to the shore base and the closest shore are given in Table 1.

(b) IDENTIFICATION OF SUPPORT BASES AND NUMBER AND TYPES OF NEW WORKERS ASSOCIATED WITH THE PROPOSED ACTIVITIES. REFERENCE IS ALSO MADE TO THE MOST CURRENT UPDATE OF THE SOCIOECONOMIC DATA BASE REPORT

The support base will be located in Venice, Louisiana. The base is capable of providing the services necessary for the proposed activities. No new facilities or workers will be needed for the proposed activities. The initial OCS Socioeconomic Data Base Report will be developed after the MMS and the States of Alabama, Louisiana, and Mississippi have identified the specific parameters to be addressed in these semiannual reports.

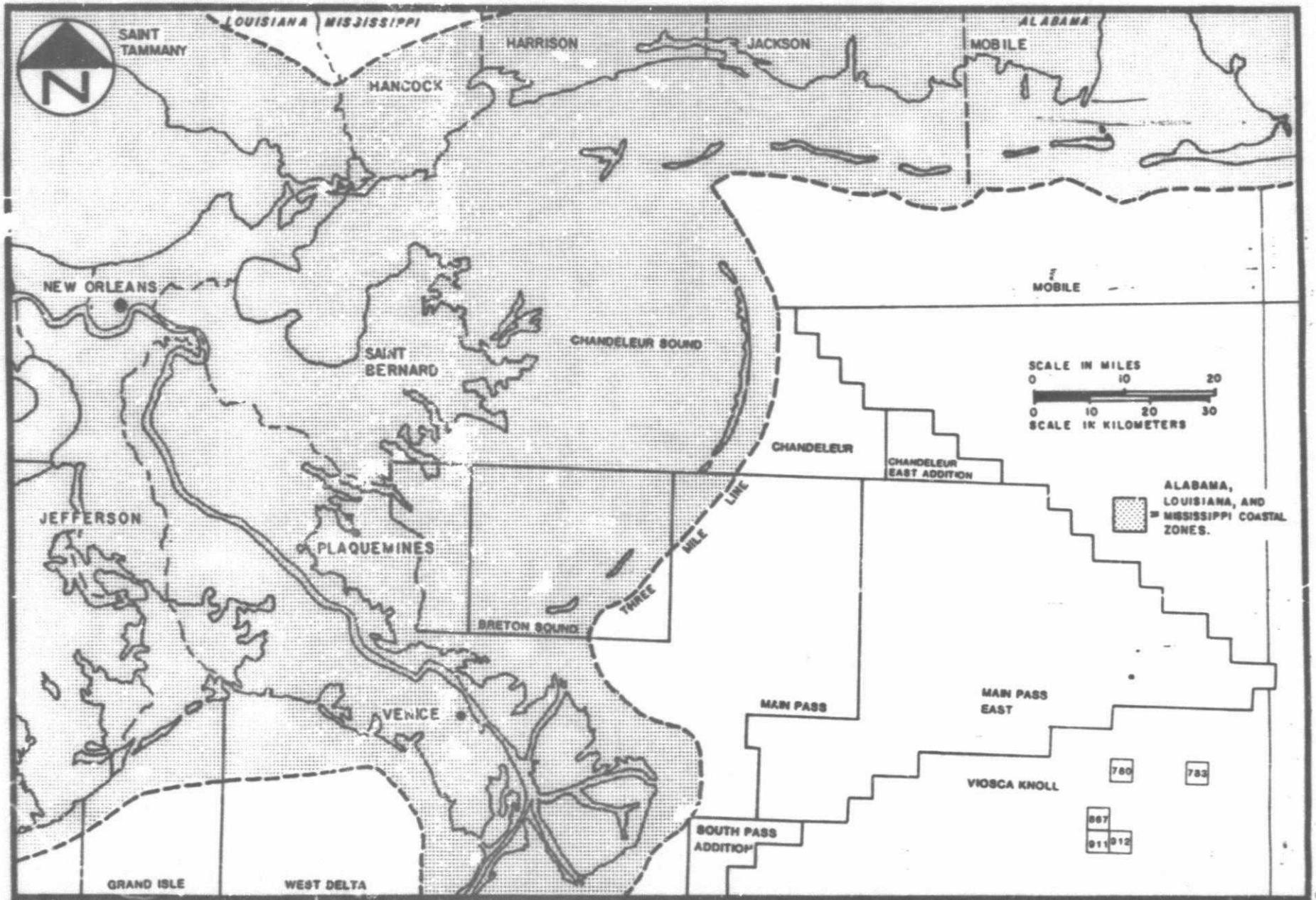


FIGURE 1. LOCATION OF VIOSCA KNOLL AREA BLOCKS 780, 783, 867, 911, AND 912 RELATIVE TO THE ALABAMA, LOUISIANA, AND MISSISSIPPI COASTAL ZONES.

TABLE 1. DISTANCES FROM VIOSCA KNOLL AREA BLOCKS 780, 783, 867, 911, and 912 TO THE SHORE BASE AND THE CLOSEST SHORE.

Block	Distance to the Shore Base	Distance to the Closest Shore
780	120 km (75 mi)	85 km (53 mi)
783	135 km (84 mi)	101 km (63 mi)
867	116 km (72 mi)	82 km (51 mi)
911	117 km (73 mi)	82 km (51 mi)
912	122 km (76 mi)	87 km (54 mi)

(c) IDENTIFICATION OF THE NUMBER, LOCATION, AND SIZE OF ANY NEW SUPPORT FACILITIES THAT WILL NEED TO BE PROVIDED FOR THE PROPOSED ACTIVITIES

No new support facilities will be needed for the proposed activities.

(d) DESCRIPTION OF ANY NEW TECHNIQUES OR UNUSUAL TECHNOLOGY THAT MAY AFFECT COASTAL WATERS

No new techniques or unusual technology will be used during the proposed activities.

(e) MAPS SHOWING LOCATION OF THE PROPOSED ACTIVITIES IN RELATION TO EACH OF THE AFFECTED STATES' COASTAL ZONES

Figure 1 shows the location of the proposed activities in relation to each of the affected States' coastal zones. The proposed activities will take place in waters adjacent to the States of Alabama and Louisiana.

(f) FOR DEVELOPMENT OPERATIONS COORDINATION DOCUMENTS, THE MEANS PROPOSED TO TRANSPORT OIL AND GAS TO SHORE FROM THE LEASE AREA AND THE ROUTES TO BE FOLLOWED AND THE ESTIMATED QUANTITIES OF OIL AND GAS TO BE MOVED ALONG SUCH ROUTES

This Plan is exploratory. No oil or gas will be produced for sale from these proposed activities at this time.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT AND IMPACTS

(a) PHYSICAL AND ENVIRONMENTAL

(1) Commercial Fishing

The proposed activities are located within some of the most productive fishing grounds in the Gulf of Mexico. National Marine Fisheries Service Zone 11, which includes Viosca Knoll Area Blocks 780, 867, 911, and 912, accounted for approximately 5% of the commercial fisheries harvest from the western and central Gulf of Mexico; Viosca Knoll Area Block 783 is located 3 km (1.7 mi) east of National Marine Fisheries Service Zone 11 (USDOI,BLM, 1981, Visual No. 5; USDOI, MMS, 1983, Visual No. 4). Gulf waters account for approximately 30% of the total annual U.S. fisheries harvest (USDC, 1982).

The Gulf fishery is dominated by the shellfish fisheries. Shrimps, crabs, and oysters (with smaller amounts of clams and scallops) are the most valuable fisheries and are usually worth three or four times more than the greater volume of finfish catch (USDOI, BLM, 1979). The USDC (1982) lists the annual commercial fisheries landings statistics for the northern Gulf coast area onshore from the lease areas.

The shrimp fishery in the Gulf of Mexico includes the brown (Penaeus aztecus), white (P. setiferus), and pink (P. duorarum) shrimps. These species are taken almost exclusively by trawls in depths ranging from approximately 2

to 73 m (6 to 240 ft). These shrimps are estuarine-dependent species which spawn in the open ocean, go through a series of larval phases in the plankton, migrate during the post-larval phase to the estuarine nursery areas, and then return to the open Gulf as adults. The USDOI, BLM (1977, Visual No. 5) indicates the seasonal variation in the habits of each of these species. The lease areas are located outside the major shrimp spawning grounds and migration routes in the northern Gulf (USDOI, MMS, 1983, Visual No. 4). Planktonic eggs and larval stages of all commercially important shrimp species may occur periodically in the lease areas.

The blue crab (Callinectes sapidus) makes up 98% of the crab harvest in the Gulf of Mexico (Riley, 1970). Its life cycle is similar to the shrimps' in that it has planktonic, estuarine, and open ocean phases. Adults spend most of their lives in the estuaries; thus, the blue crab harvest is taken inshore of the lease areas. Gravid females migrate to the open Gulf to release their eggs during spring and summer. Consequently, gravid females and planktonic larvae may occur seasonally in the lease areas.

Blocks 780 and 783 are located within commercially important finfish fishing grounds, but Blocks 867, 911, and 912 are not (USDOI, MMS, 1983, Visual No. 4). Three species of menhaden known from the Gulf make up the major finfish tonnage taken. These are Brevoortia patronus, B. gunteri, and B. smithi. Brevoortia patronus comprises most of the

Gulf catch. Purse seining is the major capture method used in this fishery (Lindall et al., 1972).

Red snapper (Lutjanus campechanus) and various species of grouper (i.e., the red grouper Epinephelus morio and gag Mycteroperca microlepis) compose the commercial hook-and-line fishery of the northern Gulf of Mexico. These fishes may be taken over irregular bottom areas in depths of 2 to 305 m (5 to 1,000 ft) (TerEco Corporation, 1976).

The striped mullet (Mugil cephalus) is generally found in nearshore areas such as harbors, estuaries, bays, and along beaches. It is a schooling fish and is generally taken with seines and trawls.

The Atlantic croaker (Micropogonias undulatus) is an abundant fish in estuarine waters. Perret et al. (1971) reported croaker to be the most abundant juvenile commercial fish taken in estuaries. Croaker is harvested and marketed both as a food fish and as an industrial bottom fish (Lindall et al., 1972).

The Florida pompano (Trachinotus carolinus) is primarily an inshore fish that is taken mostly in the surf or at passes. It is seasonally abundant (January to April) in shrimping areas.

The Spanish mackerel (Scomberomorus maculatus) migrates seasonally along the Gulf coast. It is generally taken in nearshore areas.

The red drum (Sciaenops ocellatus) is taken predominantly in nearshore habitats, as are the sheepshead (Archosargus probatocephalus), flounders, and the black drum (Pogonias cromis).

Seatrouts, including the spotted (Cynoscion nebulosus), the silver (C. nothus), and the sand (C. arenarius), are important to the bottom fish fisheries in the northern Gulf (Lindall et al., 1972). They are usually taken in offshore areas with bottom trawls.

TerEco Corporation (1976) describes some additional fish species of the northern Gulf which are important to commercial and/or sport fishermen and their predominant method of capture. Most of the northern Gulf fishes are temperate, with some incursions from Caribbean fauna. They exhibit seasonal distribution and abundance fluctuations related to oceanographic conditions (USDOI, MMS, 1983, p. 174). Many of the coastal species (e.g., the croaker, Micropogonias undulatus) are estuarine-dependent, because estuaries or coastal marshes are a critical habitat during some phase of their life cycles. Rogers (1977) postulated a net inshore-offshore movement for many demersal shelf fish species. Thus, it is probable that many of these species may occur in the lease areas at some phase of their life cycles.

Eggs and larvae (ichthyoplankton) of various commercially important fish species are probably also present in the lease areas on occasion. Sixty-nine fish species have

been identified from zooplankton samples taken along the northern Gulf coast. Dominant taxa were the families Sparidae, Lutjanidae, Triglidae, Serranidae, and Synodontidae. Stenotomus caprinus, Pristipomoides aquilonaris, Prionotus paralatus, Serranus atrobranchus, and Synodus foetens were the most important species (Chittenden and Moore, 1976). Because the majority of ichthyoplankters are at the mercy of water movements, their distributions vary considerably with space and time. The primary factors influencing ichthyoplankton in the northern Gulf are the Loop Current, the Mississippi River, and local runoff. Due to "patchiness" in distributions, presence and abundance of ichthyoplankton at any given instance cannot be predicted.

The proposed activities probably will temporarily degrade the water quality in the immediate vicinity of the drillsite due to discharges of drilling fluids and cuttings. This may cause certain fish species to avoid the area. Commercial fishing may be affected temporarily. The situation should revert to normal as soon as drilling is completed. Cumulative effects of increasing oil and gas activities off the northern Gulf coast on annual catches are as yet unknown. However, there are no data to indicate that oil and gas activities are responsible for any decline in annual catches (USDOI, BLM, 1979, p. 181).

Any oil spill that would impact the seafloor could conceivably kill benthic organisms such as shrimps or cause a

variety of sublethal effects. The potential long-term effects of a spill on the benthos are unclear because results of hydrocarbon analyses are inconclusive (USDOI, BLM, 1979, p. 160).

An oil spill would temporarily degrade water quality and introduce toxins to the water. Ichthyoplankton, if present, may be killed or functionally impaired. However, most adult fisnes encountering a spill and associated toxic water would probably exhibit avoidance behavior. This effect would be temporary and fishes should return to the area after dispersal of the spill. No significant or persistent direct effects from an oil spill on fish populations would be expected. Recruitment from surrounding areas should quickly replenish any affected ichthyoplankton populations once the spill has dispersed. Any spill would be handled according to an oil spill contingency plan approved by the MMS.

(2) Shipping

The proposed activities are rated as having minimum potential impact on shipping as they are greater than 5 km (2.6 NM) from a fairway (USDOI, BLM, 1979, p. 145). The offshore structure will be equipped with all safety equipment required by the U.S. Coast Guard and the MMS to alert ships of its presence in all weather conditions.

(3) Small Craft Pleasure Boating, Sport Fishing, and Recreation

Ditton and Graefe (1978) determined that oil and gas structures are the most popular offshore recreation destination areas, attracting 87% of the boats that fished offshore in their study area. Certain pleasure boats (i.e., sailboats, pleasure yachts, and/or open ocean racing power boats) may be slightly inconvenienced by having to maneuver around the offshore structure and its support vessels. This inconvenience is considered extremely minor as offshore structures can be avoided and ample maneuvering room is available.

Any sports fishing which might occur in the lease areas could be temporarily affected by degradation of water quality during drilling. Such a change in water quality could cause some desirable species to avoid the immediate lease areas. However, any such effects are expected to be temporary and localized and should not affect any fishery potential in the area as a whole. Populations should return to normal once drilling is completed.

(4) Cultural Resources

Coastal Environments, Inc. (1977) has identified two types of cultural resources which may be found in the northern Gulf of Mexico area: (1) historic cultural resources or shipwrecks and (2) prehistoric cultural resources or traces of previously undescribed human civilizations (USDOI,

MMS, 1983, pp. 228-240). Approximately 82% of the known shipwrecks are located within 10 km (5 NM) of shore, with only a small percentage occurring on the OCS (USDOI, BLM, 1979, p. 91). Known submarine archeological sites are extremely rare, with none being identified to date in Federal offshore leasing areas (USDOI, BLM, 1979, p. 91).

The proposed activities are located outside the Historic and Prehistoric Cultural Resources High Probability Lines (USDOI, MMS, 1983, Visual No. 11) and therefore are in a large offshore area where historic and prehistoric resources are considered unlikely to be found. An Archeological Survey was not required for these lease areas.

(5) Ecologically Sensitive Features

Several areas of environmental concern are located onshore of the lease areas. Alabama and Louisiana have developed Coastal Zone Management Programs to regulate the significant land and water activities between the outer limit of each State's coastal waters and land up to the Intracoastal Waterway and/or the 10-ft contour. Land uses which are regulated are those that have a direct and significant impact on the coastal areas requiring a State permit, and those which are required by Federal law to be consistent with the management programs (USDC and ACAB, 1979; USDC and LCNR, 1980). The programs provide for the protection of beaches, dunes, wetlands, submerged grass beds, barrier islands, oyster reefs, cultural resources, water

quality, air quality, biological resources, and wildlife habitat. Unique ecological features include zoological, botanical, and geological formations characteristic of coastal processes (Burk and Associates, 1975; USDC and ACAB, 1979; USDC and LDNR, 1980). Biologically sensitive areas of the north-central Gulf area include estuarine and coastal ecosystems comprised of salt marshes, oyster beds, grass beds, barrier beaches, and dunes (Coastal Environments, Inc., 1980). These coastal ecosystems contain nursery areas for many species of economic importance as well as habitat, rookeries, major overwintering sites, and nesting areas for many endangered and threatened species, such as the southern bald eagle, brown pelican, golden eagle, osprey, red cockaded woodpecker, American peregrine falcon, and various marine turtles (USDC and ACAB, 1979; USDOI, BLM, 1979, Visual No. 3; Coastal Environments, Inc., 1980; USDC and LDNR, 1980).

Alabama has designated two types of "Special Management Areas": (i) geographic areas of particular concern (GAPC), and (ii) areas for preservation and restoration (APR) (USDC and ACAB, 1979, pp. 77-84). Current Alabama Special Management Areas are listed below:

Geographic Areas of Particular Concern	Areas for Protection and Restoration
Port of Mobile	Point aux Pins Wetland System
Mobile-Tensaw River Delta	National Audubon Society Wildlife Sanctuary (Dauphin Island)

The lease areas are located well offshore of these sites, and none of the proposed activities should have any effect upon the Special Management Areas.

There are two existing "Special Management Areas" designated by the Louisiana Coastal Management Program (USDC and LDNR, 1980, pp. 104-108). These areas are the "Louisiana Offshore Oil Port" (LOOP or Superport) and the "Marsh Island Wildlife Refuge and Game Preserve." The lease areas are located away from both of these areas. None of the proposed activities in the lease areas should have any effect upon either area.

Conspicuous areas of environmental concern for Alabama and Louisiana are noted by the USDOI, BLM (1979, Visual Nos. 1 and 4), the USDC and ACAB (1979, Figure Nos. IV-2 to IV-4), and the USDC and LDNR (1980, Figure No. D-1).

The coastal zone areas are also of recreational importance to residents and tourists. Most recreational activities focus o the areas' water resources, which include beaches, boating areas, and fishing areas.

Offshore terrestrial areas of particular ecological significance to Alabama and Louisiana are Dauphin Island Sanctuary, Bon Secour National Wildlife Refuge, the barrier islands of Breton National Wildlife Refuge and Gulf Island National Seashore. Submerged areas of critical concern are the extensive oyster grounds off Plaquemines and St. Bernard

Parishes, and the remnant coastal banks, which are located off Mobile, Alabama (USDOI, BLM, 1979, Visual Nos. 4 and 5).

While oil spills during drilling operations are rare (Danenberger, 1976), the possibility of a spill does exist. Oil fouling in any coastal area could directly or indirectly affect a variety of species, including threatened or endangered species or species important to commercial and sport fisheries. Direct effects on biota would include fouling (particularly birds), suffocation (particularly fishes and turtles), and toxicity from contact or from the ingestion of oil or contaminated food. Any of these effects could be lethal, cause weakening, or cause a greater susceptibility to predation. Significant ecological or economic impacts could also result from the fouling of oyster beds and habitat. Indirect effects would include the destruction of critical habitat, especially breeding and nursery areas. Any effects upon endangered or threatened species would be significant.

Oil fouling of the coastal areas could also have adverse socioeconomic effects. Tourism is an important part of Gulf coast economies. Removal of beach or other coastal areas from recreational use by oil fouling would significantly decrease tourism in the affected area, causing loss of income and a variety of ripple effects in local economies.

Any spill would be handled according to an oil spill contingency plan approved by the MMS. If a spill did occur

during operations, it is unlikely that it would affect any nearshore or onshore areas or resources.

(6) Existing Pipelines and Cables

There are no existing pipelines or cables in the lease areas (USDOI, MMS, 1984).

(7) Other Mineral Uses

Other than potential oil and gas reserves, there are no known mineral resources in the lease areas.

(8) Ocean Dumping Activities

The proposed activities are not located in an area designated for ocean dumping activities.

(9) Endangered or Threatened Species

The USDOI, BLM (1979, p. 45) considers possible impacts of lease activities on endangered species in this area of the Gulf to be temporary, localized, and chance occurrences. It has judged the potential impacts on endangered species to be remote possibilities without major potential for direct effects on any single species. In addition, it has been determined that lease activities will not result in the destruction or modification of designated critical habitats or potential critical habitats. Onshore facilities are located in a previously developed area and pose no new or additional threat to endangered or threatened species.

Approximately six endangered species of cetaceans occur in the Gulf of Mexico. They are the blue whale (Balaenoptera

musculus), fin whale (Balaenoptera physalus), humpback whale (Megaptera novaeangliae), right whale (Eubalaena glacialis), sei whale (Balaenoptera borealis), and sperm whale (Physeter catodon). Generally, most of these larger cetaceans occur in continental shelf, slope, or deep oceanic waters (USDOI, BLM, 1981). The status and migration patterns of these species in the Gulf of Mexico are unknown (Lehman, 1982).

Several endangered or threatened species of sea turtles, including the Kemp's ridley (Lepidochelys kempii), hawksbill (Eretmochelys imbircata), leatherback (Dermochelys coriacea), loggerhead (Caretta caretta), and green (Chelonia mydas), may occasionally visit the lease areas.

The primary danger to marine turtles would be possible collisions with boats. Adult turtles, especially loggerheads, seem to be attracted to offshore structures for feeding and resting (USDOI, BLM, 1979, p. 165) increasing the probability of collisions. No critical habitat for any of these species is known to exist in the lease areas (USDOI, BLM, 1979, pp. 73-74).

(b) SOCIOECONOMIC

The initial OCS Socioeconomic Data Base Report will be developed after the MMS and the States of Alabama, Louisiana, and Mississippi have identified the specific parameters to be addressed in these semiannual reports. No new personnel will be needed for the proposed activities.

5. UNAVOIDABLE ADVERSE IMPACTS

(a) SUMMARY OF THE UNAVOIDABLE ADVERSE IMPACTS

Offshore structures will result in minimal navigational interference to ships using established fairways. However, during times of reduced visibility, vessels have the greatest potential to deviate from established fairways and impact offshore structures (USDOI, BLM, 1979, p. 230). Discharge of drilling muds and cuttings and air emissions during drilling operations will adversely affect marine organisms, water and air quality, and commercial fishing as described by the USDOI, BLM (1979, pp. 229-230). These impacts are temporary, however, and will be limited to an extremely small area. They are justified by the national interest in discovering and developing badly needed reserves of oil and gas. During the exploration operations, all discharges will comply with all applicable MMS and EPA requirements. No significant adverse impacts are expected. The proposed activities covered by this Plan should not result in unavoidable impacts on wetlands, cultural resources, recreational activities, shoreline aesthetics, or other land uses.

(b) STATEMENT CONCERNING THE UNAVOIDABLE ADVERSE IMPACTS

None of the environmental consequences expected during normal operations should produce significant or cumulative adverse environmental effects. The effects of a possible oil spill should have no overall cumulative or long-term effect

on the environment, except in the possible event of contamination of endangered marine species. A spill would be handled according to an oil spill contingency plan approved by the MMS. Thus, it is unlikely that a spill would occur during operations and affect any nearshore or onshore areas or resources. The proposed activities should have no significant impact on endangered species or critical habitat. The information presented in this Environmental Report indicates no clear or present reason not to proceed with the proposed activities. Withdrawal of the Plan would result in the loss of potential hydrocarbon production from these areas.

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7. FINAL STATEMENT

To the best of our knowledge, the set of findings included in the Environmental Report and Plan indicates that each of the proposed activities, their associated facilities, and effects are all consistent with and comply with the provisions and guidelines of the Alabama and Louisiana-approved Coastal Zone Management Programs. The proposed activities will be conducted in a manner consistent with the Coastal Zone Management Programs as outlined in USDC and ACAB (1979) and USDC and LDNR (1980).

The proposed activities will be carried out and completed with the guarantee of the following items:

1. The best available and safest technologies will be utilized throughout the project. This includes meeting all applicable requirements for equipment types, general project layout, safety systems, and equipment and monitoring systems.

2. All operations will be covered by an oil spill contingency plan approved by the MMS.

3. All applicable Federal, State, and local requirements regarding air emissions, water quality, and discharge for the proposed activities, as well as any other permit conditions. will be complied with.